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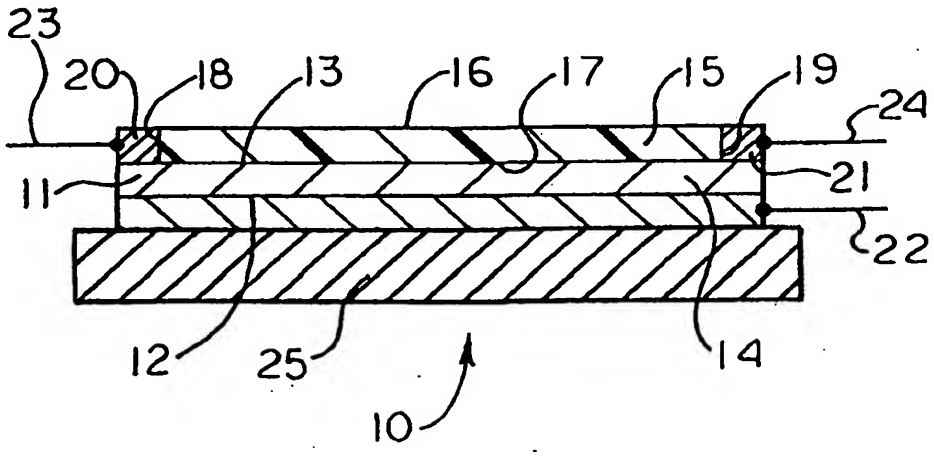
(54) Title: SEMICONDUCTING POLYMER FIELD EFFECT TRANSISTOR



(57) Abstract

A field effect transistor is made of five parts. The first part is an insulator layer, the insulator layer being an electrical insulator such as silica, the insulator layer having a first side and a second side. The second part is a gate, the gate being an electrical conductor such as silver, the gate being positioned on the first side of the insulator layer. The third part is a semiconductor layer, the semiconductor layer including a polymer, at least ten weight percent of the monomer units of the polymer being a 9-substituted fluorene unit and/or a 9,9-substituted fluorene unit, the semiconductor layer having a first side, a second side, a first end and a second end, the second side of the semiconductor layer being on the second side of the insulator layer. The fourth part is a source, the source being an electrical conductor such as silver, the source being in electrical contact with the first end of the semiconductor layer. The fifth part is a drain, the drain being an electrical conductor such as silver, the drain being in electrical contact with the second end of the semiconductor layer. A negative voltage bias applied to the gate causes the formation of a conduction channel in the semiconductor layer from the source to the drain. On the other hand, a positive bias applied to the gate causes the formation of an electron conducting channel in the semiconductor layer.